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RAW SEQUENCE LISTING

DATE: 08/16/2001

PATENT APPLICATION: US/09/923,515

TIME: 12:48:17

Input Set : A:\isph-595_Seq_ASCII.txt

Output Set: N:\CRF3\08162001\I923515.raw

ENTERED

3 <110> APPLICANT: Rosanne M. Crooke
 4 Mark J. Graham
 6 <120> TITLE OF INVENTION: ANTISENSE MODULATION OF APOLIPOPROTEIN(A) EXPRESSION
 8 <130> FILE REFERENCE: ISPH-0595
 10 <140> CURRENT APPLICATION NUMBER: US/09/923,515
 11 <141> CURRENT FILING DATE: 2001-08-07
 13 <160> NUMBER OF SEQ ID NOS: 41
 15 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 17 <210> SEQ ID NO: 1
 18 <211> LENGTH: 20
 19 <212> TYPE: DNA
 20 <213> ORGANISM: Artificial Sequence
 22 <220> FEATURE:
 23 <223> OTHER INFORMATION: Antisense Oligonucleotide
 25 <400> SEQUENCE: 1
 26 tccgtcatcg ctctcaggg 20
 28 <210> SEQ ID NO: 2
 29 <211> LENGTH: 20
 30 <212> TYPE: DNA
 31 <213> ORGANISM: Artificial Sequence
 33 <220> FEATURE:
 34 <223> OTHER INFORMATION: Antisense Oligonucleotide
 36 <400> SEQUENCE: 2
 37 atgcattctg cccccaagga 20
 39 <210> SEQ ID NO: 3
 40 <211> LENGTH: 13938
 41 <212> TYPE: DNA
 42 <213> ORGANISM: Homo sapiens
 44 <220> FEATURE:
 45 <221> NAME/KEY: CDS
 46 <222> LOCATION: (46)...(13692)
 48 <400> SEQUENCE: 3
 49 ctgggattgg gacacacttt ctggacactg ctggccagtc caaa atg gaa cat aag 57
 50 Met Glu His Lys
 51 1
 53 gaa gtg gtt ott cta ott ott tta ttt ctg aaa tca gca gca cct gag 105
 54 Glu Val Val Leu Leu Leu Leu Phe Leu Lys Ser Ala Ala Pro Glu
 55 5 10 15 20
 57 caa agc cat gtg gtc cag gat tgc tac cat ggt gat gga cag agt tat 153
 58 Gln Ser His Val Val Gln Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr
 59 25 30 35
 61 cga ggc acg tac tcc acc act gtc aca gga agg acc tgc caa gct tgg 201
 62 Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp
 63 40 45 50
 65 tca tct atg aca cca cat caa cat aat agg acc aca gaa aac tac cca 249
 66 Ser Ser Met Thr Pro His Gln His Asn Arg Thr Thr Glu Asn Tyr Pro
 67 55 60 65

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69 aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca 297
70 Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala
71      70      75      80
73 gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc 345
74 Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys
75 85      90      95      100
77 aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg 393
78 Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro
79      105      110      115
81 act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg 441
82 Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro
83      120      125      130
85 act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag 489
86 Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln
87      135      140      145
89 agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa 537
90 Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln
91      150      155      160
93 gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac 585
94 Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr
95 165      170      175      180
97 tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct 633
98 Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala
99      185      190      195
101 gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag 681
102 Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu
103      200      205      210
105 tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg 729
106 Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala
107      215      220      225
109 cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa 777
110 Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln
111      230      235      240
113 gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat 825
114 Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn
115 245      250      255      260
117 gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc 873
118 Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr
119      265      270      275
121 tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca 921
122 Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro
123      280      285      290
125 gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca 969
126 Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro
127      295      300      305
129 gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg 1017
130 Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg
131      310      315      320
133 tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc 1065

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134	Trp	Glu	Tyr	Cys	Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	Glu	Gly	Thr	Ala	
135	325					330				335						340	
137	gtc	gcg	cct	ccg	act	gtt	acc	ccg	gtt	cca	agc	cta	gag	gct	cct	tcc	1113
138	Val	Ala	Pro	Pro	Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	Glu	Ala	Pro	Ser	
139					345					350						355	
141	gaa	caa	gca	ccg	act	gag	caa	agg	cct	ggg	gtg	cag	gag	tgc	tac	cat	1161
142	Glu	Gln	Ala	Pro	Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys	Tyr	His	
143				360					365					370			
145	ggt	aat	gga	cag	agt	tat	cga	ggc	aca	tac	tcc	acc	act	gtc	aca	gga	1209
146	Gly	Asn	Gly	Gln	Ser	Tyr	Arg	Gly	Thr	Tyr	Ser	Thr	Thr	Val	Thr	Gly	
147			375					380					385				
149	aga	acc	tgc	caa	gct	tgg	tca	tct	atg	aca	cca	cac	tcg	cat	agt	cgg	1257
150	Arg	Thr	Cys	Gln	Ala	Trp	Ser	Ser	Met	Thr	Pro	His	Ser	His	Ser	Arg	
151		390					395					400					
153	acc	cca	gaa	tac	tac	cca	aat	gct	ggc	ttg	atc	atg	aac	tac	tgc	agg	1305
154	Thr	Pro	Glu	Tyr	Tyr	Pro	Asn	Ala	Gly	Leu	Ile	Met	Asn	Tyr	Cys	Arg	
155	405				410					415					420		
157	aat	cca	gat	gct	gtg	gca	gct	cct	tat	tgt	tat	acg	agg	gat	ccc	ggt	1353
158	Asn	Pro	Asp	Ala	Val	Ala	Ala	Pro	Tyr	Cys	Tyr	Thr	Arg	Asp	Pro	Gly	
159				425					430					435			
161	gtc	agg	tgg	gag	tac	tgc	aac	ctg	acg	caa	tgc	tca	gac	gca	gaa	ggg	1401
162	Val	Arg	Trp	Glu	Tyr	Cys	Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	Glu	Gly	
163				440				445					450				
165	act	gcc	gtc	gcg	cct	ccg	act	gtt	acc	ccg	gtt	cca	agc	cta	gag	gct	1449
166	Thr	Ala	Val	Ala	Pro	Pro	Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	Glu	Ala	
167			455					460					465				
169	cct	tcc	gaa	caa	gca	ccg	act	gag	caa	agg	cct	ggg	gtg	cag	gag	tgc	1497
170	Pro	Ser	Glu	Gln	Ala	Pro	Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	Glu	Cys	
171		470					475					480					
173	tac	cat	ggt	aat	gga	cag	agt	tat	cga	ggc	aca	tac	tcc	acc	act	gtc	1545
174	Tyr	His	Gly	Asn	Gly	Gln	Ser	Tyr	Arg	Gly	Thr	Tyr	Ser	Thr	Thr	Val	
175	485				490					495						500	
177	aca	gga	aga	acc	tgc	caa	gct	tgg	tca	tct	atg	aca	cca	cac	tcg	cat	1593
178	Thr	Gly	Arg	Thr	Cys	Gln	Ala	Trp	Ser	Ser	Met	Thr	Pro	His	Ser	His	
179				505					510					515			
181	agt	cgg	acc	cca	gaa	tac	tac	cca	aat	gct	ggc	ttg	atc	atg	aac	tac	1641
182	Ser	Arg	Thr	Pro	Glu	Tyr	Tyr	Pro	Asn	Ala	Gly	Leu	Ile	Met	Asn	Tyr	
183			520					525					530				
185	tgc	agg	aat	cca	gat	gct	gtg	gca	gct	cct	tat	tgt	tat	acg	agg	gat	1689
186	Cys	Arg	Asn	Pro	Asp	Ala	Val	Ala	Ala	Pro	Tyr	Cys	Tyr	Thr	Arg	Asp	
187			535					540					545				
189	ccc	ggt	gtc	agg	tgg	gag	tac	tgc	aac	ctg	acg	caa	tgc	tca	gac	gca	1737
190	Pro	Gly	Val	Arg	Trp	Glu	Tyr	Cys	Asn	Leu	Thr	Gln	Cys	Ser	Asp	Ala	
191		550				555				560							
193	gaa	ggg	act	gcc	gtc	gcg	cct	ccg	act	gtt	acc	ccg	gtt	cca	agc	cta	1785
194	Glu	Gly	Thr	Ala	Val	Ala	Pro	Pro	Thr	Val	Thr	Pro	Val	Pro	Ser	Leu	
195	565				570					575						580	
197	gag	gct	cct	tcc	gaa	caa	gca	ccg	act	gag	caa	agg	cct	ggg	gtg	cag	1833
198	Glu	Ala	Pro	Ser	Glu	Gln	Ala	Pro	Thr	Glu	Gln	Arg	Pro	Gly	Val	Gln	

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199          585          590          595
201 gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc 1881
202 Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr
203          600          605          610
205 act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac 1929
206 Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His
207          615          620          625
209 tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg 1977
210 Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met
211          630          635          640
213 aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg 2025
214 Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr
215 645          650          655          660
217 agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca 2073
218 Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser
219          665          670          675
221 gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca 2121
222 Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro
223          680          685          690
225 agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg 2169
226 Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly
227          695          700          705
229 gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac 2217
230 Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr
231          710          715          720
233 tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca 2265
234 Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr
235 725          730          735          740
237 cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg 2313
238 Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu
239          745          750          755
241 atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt 2361
242 Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys
243          760          765          770
245 tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa 2409
246 Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln
247          775          780          785
249 tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg 2457
250 Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro
251          790          795          800
253 gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg 2505
254 Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg
255 805          810          815          820
257 cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc 2553
258 Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly
259          825          830          835
261 aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct 2601
262 Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser
263          840          845          850

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265 atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct 2649
266 Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala
267      855      860      865
269 ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct 2697
270 Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro
271      870      875      880
273 tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg 2745
274 Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu
275 885      890      895      900
277 acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt 2793
278 Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val
279      905      910      915
281 acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag 2841
282 Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu
283      920      925      930
285 caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat 2889
286 Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr
287      935      940      945
289 cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg 2937
290 Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp
291      950      955      960
293 tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca 2985
294 Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro
295 965      970      975      980
297 aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca 3033
298 Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala
299      985      990      995
301 gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc 3081
302 Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys
303      1000      1005      1010
305 aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg 3129
306 Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro
307      1015      1020      1025
309 act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg 3177
310 Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro
311      1030      1035      1040
313 act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag 3225
314 Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln
315 1045      1050      1055      1060
317 agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa 3273
318 Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln
319      1065      1070      1075
321 gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac 3321
322 Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr
323      1080      1085      1090
325 tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct 3369
326 Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala
327      1095      1100      1105
329 gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag 3417

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VERIFICATION SUMMARY

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L:10 M:270 C: Current Application Number differs, Replaced Application Number

L:11 M:271 C: Current Filing Date differs, Replaced Current Filing Date